

# Benjamin Smith

## Messerschmidt Safety Consultants

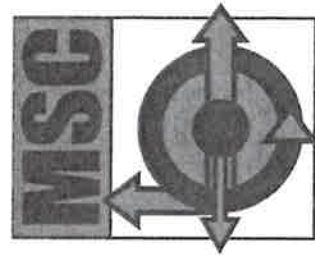
6068 US Highway 98, Suite 1-144

Hattiesburg, MS 39402

601.297.6598

b.smith@mscrecon.com

www.mscrecon.com



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## Education

Masters of Science, Analytics – in progress - anticipated graduation summer 2018  
Villanova University, Villanova, Pennsylvania

Bachelor of Science, Biological Sciences—05/05  
-- *Minor Fields of Study: Forensic Science and Chemistry*  
The University of Southern Mississippi, Hattiesburg, Mississippi

Coursework in Physics, Math, Chemistry, Biology, & Human Performance—2001-2003  
Pearl River Community College, Poplarville, Mississippi

## Certifications & Accreditation

- ACTAR (Accreditation Commission for Traffic Accident Reconstruction), #2270
- Crash Data Retrieval (CDR) System Technician
- Crash Data Retrieval System Operator / Data Analyst
- Vista FX Series CAD Software Diagramming and Animating

## Academic Recognition

Phi Theta Kappa Academic Honor Society  
Alpha Omega Science Honor Society  
Beta Beta Beta Science Honor Society

## Professional Experience

**Principal Technical Analyst & Managing Partner—08/10-Present**  
**Messerschmidt Safety Consultants, LLC, Hattiesburg, Mississippi**

- Manage day-to-day operations of Hattiesburg, Mississippi office



- Investigate and reconstruct motor vehicle accidents
- Perform forensic analysis of roadway and vehicle evidence
- Teach accident reconstruction and evidence preservation techniques
- Conduct Event Data Recorder data retrieval, preservation, and analysis
- Perform forensic and safety related research
- Create computer animations and scene diagrams
- Photograph and document accident scenes and related evidence

**Associate Crash Reconstructionist—08/07 – 08/10**

**ASI Investigations, Inc., Hattiesburg, Mississippi**

- Analyzed forensic evidence and performed physics---based calculations
- Performed Crash Data Retrieval downloads
- Performed downloads of heavy vehicle Engine Control Modules
- Performed field investigations, including documenting vehicle, scene, and trace evidence
- Conducted daytime and nighttime photography of collision sites and vehicles
- Conducted research on heavy vehicle Engine Control Modules and Event Data Recorders
- Created computer animations and scene diagrams
- Developed informational lectures and seminars for insurance and academic organizations

**Technical Consultant—07/06 – 08/07**

**ASI Investigations, Inc., Hattiesburg, Mississippi**

- Analyzed evidence and performed physics---based calculations
- Performed Crash Data Retrieval downloads
- Performed field investigations to include documenting vehicle, scene, and trace evidence
- Conducted daytime and nighttime photography of collision sites and vehicles
- Created computer animations and scene diagrams
- Administrated the company's online presence and internet communications

**Advanced Science Intern—12/05 – 07/06**

**Walt Disney World, Orlando, Florida**

- Monitored bio---engineering projects and systems
- Performed chemical analyses
- Communicated with the public about current projects, research, and general animal care

**Forensic Science Intern—10/03 – 07/05**

**ASI Investigations, Inc., Hattiesburg, Mississippi**

- Performed scene and vehicle documentation
- Developed animations and diagrams

## **Specialized Training**

### **Advanced Accident Reconstruction with Human Factors – 11/17**

#### **Pelham, Alabama**

- History and Foundation of Reaction Time Research
- Understanding Driver Response Terms and Definitions
- Weather Influences and Driver Response
- Evaluating a Response during Nighttime Driving
- Nighttime Response Scenarios and Documenting Nighttime Crashes
- Headlight Beam Analysis
- Evaluating Path Intrusion Crashes
- Acceleration Rates of Drivers
- Gap Acceptance
- Driver Search Patterns
- Driver Response to Lead Vehicles, Traffic Signals, and Decision Making
- Tutorial on I.DRR Software (PRT software)

### **2016 WREX Conference – 05/16**

#### **Orlando, Florida**

- EDR Anomalies
- Video Analysis
- Heavy Vehicle
- Speedometers in AR
- Digital Forensics & HV Post Crash Inspections
- Visual Amodal Perception
- UAVs
- Autonomous Driving
- Traffic Signals
- Distracted Driving
- EDR Update

### **Motor Vehicle Accident Reconstruction and Cause Analysis 2016 Seminar – 04/16**

#### **Pelham Police Department- Pelham, Alabama**

- Elements of forensic accident reconstruction
- Motor vehicle factors in accident reconstruction
- Vehicle motion analysis
- Accident avoidance analysis
- Collision mechanics

### **Forensic Photography – 11/14**

#### **University of West Virginia; Morgantown, West Virginia**

- History of forensic photography
- Techniques of forensic photography

- Forensic video techniques

**2014 Arc-CSI Crash Conference—06/14**

**Las Vegas, Nevada**

- Conspicuity and visibility
- Low delta-v crashes
- Wheel slip
- Human fatigue and driver performance
- Heavy Vehicle Event Data Recorders

**Crash Data Retrieval (CDR) Operators and Analysis Course with Advances Analysis Using the Bosch CDR System—12/12**

**Hattiesburg, Mississippi**

- CDR Data Retrieval
- CDR Data Analysis
- CDR Data Integration with PDOF and Delta V Calculations

**Practical Applications of CDR Technology— 06-12**

**Pelham, Alabama**

- Hands-on training in how to use the Power Distribution Center (PDC) tool, which facilitates the access of EDR data in heavily damaged vehicles (taught by Bruce Gazdick, creator of the PDC tool)

**PhotoModeler: Collision Reconstruction—06/11**

**EOS Systems, Jacksonville, Florida**

- Crash site photogrammetry
- Principles of photogrammetry
- 3D modeling
- Vehicle and component modeling
- Principles of the PhotoModeler Program
- Unknown camera photography

**2011 Society of Automotive Engineers (SAE) World Congress—04/11**

**Detroit, Michigan**

- Heavy Vehicle EDRs
- CDR systems
- Photogrammetry
- Commercial engine braking systems

**National Crash Analysis Center (NCAC) Conference—09/10**

**The George Washington University – Ashburn Virginia & Federal Highway Administration (FHWA) Research Center / Federal Outdoor Impact Laboratory (FOIL), Langley, Virginia**

- Vehicle rollovers
- Far side impacts

- Guard rail impacts
- Crash simulations
- Live vehicle crash testing
- Vehicle modeling
- National crash test databases
- Driver simulators

**How to Interpret Commercial Vehicle Event Data Recorders—02/10**

**The University of Tulsa CESE, Tulsa, Oklahoma**

- Data download protocols
- Review of subject--related literature
- Data analysis
- Electronic Control Module (ECM) properties for Caterpillar, Cummins, Detroit Diesel, International, and Mercedes Benz engines

**Energy Methods and Damage Analysis in Traffic Crash Reconstruction—10/09**

**Institute for Police Technology and Management & West Chester Ohio Police Department, West Chester, Ohio**

- Vector analysis
- Equivalent barrier speed
- Momentum
- Crush measuring protocol
- Pole impacts
- Damage interpretation
- Energy concepts and analysis

**Midwest Association of Traffic Accident Investigators (MATAI) Conference—06/09**

**Wisconsin Dells, Wisconsin**

- Seminar on Heavy Vehicle EDRs (Bill Messerschmidt)
- Seminar on Narrow Object Impact Energy Methods (Dr. John Daily)
- Seminar on the Crash Data Retrieval Update (Rick Ruth, P.E.)
- Seminar on Commercial Vehicle Air Braking Systems (Ronald Huesser)
- Seminar on Lighting and Optics (James Sobek, P.E.)

**Bendix Foundation Brake Training—10/08**

**Knorr---Bremse / Bendix---Spicer, St. Phillips College, San Antonio, Texas**

- Principles of commercial vehicle braking systems
- Anti-lock brakes
- Troubleshooting brake systems
- Individual air brake components
- Air disc brakes
- Electrical air brake components

**Inspection and Investigation of Commercial Vehicle Crashes—07/08**

**Institute of Police Technology and Management, Jacksonville, Florida**

- Commercial vehicle inspections and components
- Commercial vehicle dynamics
- Commercial braking systems
- Characteristics of braking commercial vehicles

**CDR Data Analyst / CDR System Operator Certification Course—06/08  
CSI/Bosch, New Orleans, Louisiana**

- Analyzing CDR downloads from Ford, Chrysler, and GM vehicles
- Proper application of retrieved crash data
- Operating principles of the CDR electronic system and the seatbelt/airbag system

**The Optics, Lighting, and Visibility for the Forensic Investigator—10/07  
St. Paul Police Department, St. Paul, Minnesota**

- Principles of light
- Photometry
- Photographic techniques
- Light energy behavior
- Light documentation
- Nighttime photo and video techniques

**Advanced Crash Investigation Level 3—08/07  
Eagle Ridge Conference Center, Raymond, Mississippi**

- Weight shift
- Speed estimates and crush
- Momentum and energy
- Expert testimony
- Commercial vehicles
- Vector analysis

**Advanced Crash Investigation Level 2—04/07  
Eagle Ridge Conference Center, Raymond, Mississippi**

- Kinetic energy and Newton's Laws of Motion
- Friction and acceleration
- Advanced scene measuring and diagramming
- Time-distance projects
- Vehicle damage and dynamics
- Human factors

**Nikon Total Station Training—03/07  
Moore Police Department, Moore, Oklahoma**

- Proper use and the controls of the total station
- Forensic mapping techniques

**Advanced Diagramming and Animation (Vista FX Series)—03/07**

**Moore Police Department, Moore, Oklahoma**

- Forensic mapping applications using Vista FX
- 2-D and 3-D animations
- Software-aided momentum and vector analysis
- Computer-based crash simulations
- Computer-aided mathematical crush calculations (CrashMath)

**Advanced Crash Investigation Level 1—08/06**

**Ridgeland Police Department, Ridgeland, Mississippi**

- Principles of crash reconstruction
- Photographic documentation
- Basic speed calculations
- Evidence types
- Scale crash site diagramming

**Crash Data Retrieval System Technician Course—06/06**

**Hattiesburg, Mississippi**

- Proper procedures for downloading CDR modules and physical locations of modules/DLC ports in various vehicles

**Publications**

“Antilock Brake System (ABS) Electronic Control Unit (ECU) Data.” *Collision Connection*. Accident Reconstruction Communications (ARC) Network.08/12

“The Accuracy of Diagnostic Event Data in Bendix Antilock Brake System Control Modules.” (SAE 2012---01---0994) (with Timothy Austin & Michael Farrell) Society of Automotive Engineers (SAE), Warrendale, Pennsylvania. 2012.

“Applying Heavy Vehicle EDR Data in the Real World.” (with William Messerschmidt & Al Dunn, PhD, PE) *Collision: The International Compendium for Crash Research*, Collision Publishing, Seattle, Washington. Vol. 6:1, Spring 2011.

“Data Extraction Methods and their Effect on the Retention of Event Data Contained in the Electronic Control Modules of Detroit Diesel and Mercedes---Benz Engines.” (SAE 2011---01---0808) (with David Plant & Timothy Austin) Society of Automotive Engineers (SAE), Warrendale. Pennsylvania. 04/11

“Simulating the Effect of Collision---Related Power Loss on the Event Data Recorders of Heavy Trucks.” (SAE 2010) (with William Messerschmidt, Timothy Austin, Timothy Cheek, David Plant, and Chris Voeglie) Society of Automotive Engineers (SAE), Warrendale, Pennsylvania. 4/10

"Testing the Last Stop Record in the Mercedes MBE 4000." (with William Messerschmidt and Ronnie DeMonia) *Collision: The International Compendium for Crash Research*, Vol. 4, Collision Publishing, Seattle, Washington. 10/09

## **Presentations**

"Crash Reconstruction." University of Southern Mississippi, Department of Forensic Science: Seminar in Forensic Science Course. Hattiesburg, Mississippi. 03/2016

"Forensic Photography." North Texas International Association of Special Investigation Units. Dallas, Texas. 02/16

"HVEDR: New Engines, New Software, New Coverage." ARC---CSI Crash Conference. Las Vegas, Nevada. 06/14

"Emergency Response Expert Panel." THEMIS Advocates Conference. Miami Beach, Florida. 1/14

"Overcoming Potential Detours & Roadblocks with Experts." Mississippi Association of Justice Auto Litigation Meeting. Jackson, Mississippi. 09/13

"Forensic Photography." North Texas International Association of Special Investigation Units. Dallas, Texas. 08/12

"Forensic Photography." The Farm Bureau Special Investigation Unit Seminar. Biloxi, Mississippi. 03/12

"Crash Reconstruction." University of Southern Mississippi, Department of Forensic Science: Special Projects Course. Hattiesburg, Mississippi. 02/11

"The Principles and Tools of Forensic Mapping." University of Southern Mississippi, Forensic Science Department, Hattiesburg, Mississippi, 03/02/10 and 02/17/09

"An In-depth Look at Heavy Vehicle Event Data Recorders." Midwest Association of Traffic Accident Investigators (MATAI) Conference, Kalahari Convention Center, Wisconsin Dells, Wisconsin, 06/10/09

"Forensic Mapping and Diagramming" Advanced Crash Reconstruction Level III, Jackson County Sheriff's Department, Pascagoula, Mississippi, 02/25/09

"Interpretation and Recognition of Collision Scene Evidence." State Farm Southern Adjusters, Meridian, Mississippi, 10/28/08



“Topics in Advanced Crash Reconstruction.” US Army, Camp Shelby, Military Police, Hattiesburg, Mississippi, 10/16/08

“Crime and Crash Scene Mapping.” University of Southern Mississippi, Forensic Science Department, Hattiesburg, Mississippi, 04/10/08

“Forensic Mapping with Total Stations.” Advanced Crash Reconstruction Level III Class, Eagle Ridge Conference Center, Raymond, Mississippi, 07/31/07

“The Integration of Forensic Mapping and Total Stations with CAD Software as it Pertains to Crime Scenes.” University of Southern Mississippi, Forensic Science Department, Hattiesburg, Mississippi, 05/22/07

### **Professional Affiliations**

- Society of Automotive Engineers (SAE) Member #6131085121—2010-present
- SAE Accident Investigation & Reconstruction Practices (AIRP) Committee Member